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Alberta Energy

ANNUAL REPORT 1989-1990

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Alberta
ENERGY
Office of the Minister

228 Legislature Building, Edmonton, Alberta, Canada T5K 2B6 403/427-3740

May 31, 1991

The Honourable Dr. David J. Carter
Speaker of the Legislative Assembly
Province of Alberta

Mr. Speaker:

I have the honour to submit the Annual Report of Alberta Energy for the fiscal year ended March 31, 1990.

Respectfully submitted,

Rick Orman
Minister of Energy

Alberta
ENERGY

Office of the Deputy Minister

Petroleum Plaza North Tower
9945 - 108 Street, Edmonton
Alberta, Canada, T5K 2G6
Telephone 403/427-8032
Telefax 403/427-7737

May 31, 1991

The Honourable Rick Orman
Minister, Alberta Energy

Dear Minister:

It is my pleasure to submit to you Alberta Energy's Annual Report for the fiscal year 1989-90. The report contains a summary of department activities, revenues and expenditures for the year.

Respectfully submitted,

M.F. Kanik
Deputy Minister

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For Additional Copies, Contact:

Information Centre
Alberta Energy
Alberta Forestry, Lands and Wildlife
Main Floor, Bramalea Building
9920 - 108 Street
Edmonton, Alberta
Canada T5K 2M4
Telephone: (403) 427-3590

Information Centre
Alberta Energy
Alberta Forestry, Lands and Wildlife
Main Floor, Britannia Building
703 - 6th Avenue S.W.
Calgary, Alberta
Canada T2P 0T9
Telephone: (403) 297-6324

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Minister's Message

The end of the 1989-90 fiscal year coincides with the end of my first year as Minister of Energy. It has been a period of considerable achievement and progress. For this, I would like to thank all those people and organizations inside and outside government who have made this possible. It has been a privilege and a pleasure to work with so many individuals who recognize that much can be done to deal effectively with our two most pressing energy-related concerns: a healthy environment, which is essential for our physical well-being; and stable exports, which are the basis of our economic prosperity.

Few issues are more urgent in the 1990s than creating a healthy, natural environment, for present and future generations. Where the deleterious effects of energy production and use are factors, our efforts to find corrective measures are being directed into three major approaches: reducing emissions that pollute the air we breathe, seeking alternative energy sources to fossil fuels, and making better use of existing resources.

The Clean Air Strategy for Alberta is a key component of the first approach. On March 15, 1990, the Minister of the Environment and I took a major step forward when we made a joint declaration to work together to generate discussion and action on pollutant emissions into the air.

This initiative followed two significant departmental projects: completion of an inventory of energy-related carbon dioxide emissions in the province, and an analysis of measures that might reduce both energy demand and emissions.

The extensive use of alternatives to fossil fuels for energy generation is a longer term objective. But work is well under way, and a portent of the future came in December 1989 when I was pleased to announce the creation of the Southwest Alberta Renewable Energy Initiative. Its objective is to research and develop projects that use solar and wind as energy sources. An Alberta Office of Renewable Energy Technology is to be established, and among the initiative's first projects is a wind farm in the Pincher Creek area.

Meanwhile, we began a process to enhance our Small Power Research and Development Program. This encourages the generation of electricity through small projects using renewable biomass wind, hydro, solar, geothermal and peat resources. Program participants will be given a boost with an increase in the price paid for the electricity they feed into the provincial system.

Our approach to making better use of available energy has several elements. One is co-generation. This is the simultaneous production of electric and thermal energy from a single fuel source. A study on its commercial possibilities in Alberta is now under way.

We also moved ahead with interprovincial cooperation. Alberta already has electricity exchange agreements with British Columbia and Saskatchewan, and these promise to be the foundation of greater things in the future. In June 1989, the premiers of the four western provinces agreed to begin joint studies of the benefits accruing from more coordination among the region's electrical systems.

Closer to home, the department continued its successful energy audit and information programs designed to help consumers use energy more efficiently.

A review of the royalty and mineral tax system indicated that no major modifications were required, but the short-term nature of the Alberta Royalty Tax Credit regime was a source of concern to industry. As a result, a regime that will be in effect for five years, but which will be sensitive to change in crude oil prices, was announced.

During the year the department's role for dealing with all energy forms was augmented. In January, 1990, responsibility for electricity policy was transferred from Alberta Transportation and Utilities to Alberta Energy.

The department focussed on energy exports and the role they play in sustaining the province's economic health. For example, in 1989, three-quarters of Alberta's production of crude oil and equivalents went to other areas in Canada, to the United States, and elsewhere. Natural gas exports are also growing, especially to meet demands in the United States.

Difficulties arose in California, where that state's Public Utilities Commission developed a rule-making process containing major implications for Alberta gas producers. Submissions were made to the Commission, and discussions began which were not completed as the fiscal year ended.

Despite the California experience, the Free Trade Agreement between Canada and the United States has been generally positive for Alberta's energy sector. Now we are studying the possible effects and opportunities that might evolve, first, from recent trade talks between the United States and Mexico, and, second, from the political and economic changes occurring in eastern Europe.

As this report shows, royalty and gross revenues for the 1989-90 fiscal year were only marginally ahead of 1988-89. Yet Alberta remains in a strong position as a supplier of energy fuels, even though our reserves of conventional crude oil are depleting. Replacement sources will include, ultimately, alternatives to fossil fuels. More immediately, they will include our immense oil sands resource. This already accounts for about 20 per cent of Canada's oil production.

Albertans have a direct interest in three facilities in the oil sands sector. The province holds a 16.74 per cent equity interest in the Syncrude plant, and receives joint venture payments in lieu of a royalty.

Alberta also has a 24.17 per cent equity interest in the Lloydminster Bi-Provincial Upgrader. This facility, scheduled to start up in 1992, will process heavy oil and bitumen from Alberta and Saskatchewan into high-quality synthetic crude oil. The upgrader will keep jobs and incremental values in western Canada.

Finally, we have a 10 per cent equity interest in the OSLO Commercial Project. This integrated oil sands mining and upgrading operation is a joint project of an industry consortium and the federal and Alberta governments. However, in February 1990, the federal government cut funds for construction of the project from its budget. Since then, Alberta has been working with the consortium to ensure that work proceeds beyond the engineering studies.

The Alberta Crown owns most of the mineral resources in the province, and government policy concerning resources relies on two conditions. One is a business climate that is conducive to the exploration and development of these resources by private individuals and companies. The other is a long-term royalty regime that gives Albertans an equitable share of profits from resource development.

I am confident that this policy offers the very best of benefits to the province's growing population, as well as to the entrepreneurs who are continuing Alberta's long history of discovery and development. As a province, we have come a long way. But we have much to do to meet the energy-related environmental and export challenges that lie ahead. I have no doubt that, if those of us in the energy sector continue to work together in the future as we have in the past year, we will succeed.

Rick Orman
Minister

Deputy Minister's Message

Alberta Energy celebrates its 60th anniversary in 1990!

The Department of Lands and Mines was created in October 1930, after the federal government ceded ownership and authority for administering resources to the province. Although the energy sector and the department have experienced dramatic changes since then, caring for and sensibly managing the resources on behalf of the people of Alberta has remained a steadfast objective of the department.

Since its modest beginnings in the 1930's the Alberta energy industry today has become an $18 billion business, contributing over $2 billion in royalties to the government and accounting for one-fifth of the provincial GDP. Since its inception, the department has focused on the major issues of the day and it has grown alongside industry, changing its organization and structure to best achieve its goals.

During the 1989-90 fiscal year the department faced numerous challenges, and witnessed significant organizational changes.

Addressing natural gas issues, especially those related to transportation and markets, required significant effort. Based in part on submissions by the department, the NEB discontinued its cost-based analysis for assessing natural gas exports. Legislation to support natural gas supply protection within Alberta, and legislation to implement a provincial ethane policy was adopted.

With the public's increasing concern with the environment and sustainable development, the department undertook a review of how to deal with such questions. As a result, the Sustainable Energy Development Division, encompassing a new Branch called Energy Efficiency and Environmental Affairs, was formed to enable the department to become more responsive to policy initiatives, new technologies and growing public concern for environmental protection.

During the past 60 years, the department has had extremely dedicated, capable, and professional staff. As Alberta approaches the turn of the century, no doubt many more changes will occur in the focus, responsibilities and structure of the department. But the dedication and professionalism of the staff will, I am confident, remain constant and exemplary.

M.F. Kanik
Deputy Minister

Alberta Energy Department Structure

Changes in Departmental Organization

During 1989-90, several organizational changes occurred, with the objective of achieving greater functional efficiency, and enabling the department to become more responsive to policy initiatives, new technologies and growing public concern for environmental protection.

Reporting responsibility for the Communications Branch was changed so that the Communications Director reports directly to the Deputy Minister. For administrative matters, however, the branch reports to the Senior Assistant Deputy Minister, Finance and Administration.

Two divisions were renamed and restructured, while the other divisions remained unchanged in 1989-90.

Sustainable Energy Development Division

was created, with responsibility for two existing organizational units: Oil Sands and Upgrading Branch, and Scientific and Engineering Services. These units were restructured into two branches: Nonconventional Energy Development, and Research and Technology. A new branch called Energy Efficiency and Environmental Affairs, which encompassed the existing Energy Conservation Branch, was also created.

The new division has five goals: to advise upon and administer programs that promote the production and use of energy resources in an economic and environmentally responsible manner; to communicate with other Alberta departments and agencies, and industry, interest groups, and consumers, on related issues; to provide assessments and advice to the Minister of Energy; to provide analysis on the development of non-conventional energy resources; and to advise on and administer research and technology programs in the areas of renewable energy, hydrogen and coal.

Markets, Supply and Industry Analysis Division

was the second division created. It has responsibility for the existing organizational units: Conventional Oil, Gas and Coal Branch, Markets and Regulatory Policy Branch, and the Utilities Policy Development Branch, which was transferred to the department from Alberta Transportation and Utilities on January 1, 1990. These units were restructured into three branches: Markets and Regulatory Policy, Revenue Forecasts and Industry Analysis, and Supply and Royalty Policy.

The division provides detailed assessments of Alberta's energy industry and factors that may improve or impede the development of the industry in the future. It makes recommendations to the Government of Alberta on policy direction and budget planning in light of the impact of those factors. It also determines appropriate government involvement in Alberta's energy industry and recommends specific fiscal treatments. The division also provides policy advice and initiatives on electricity issues.

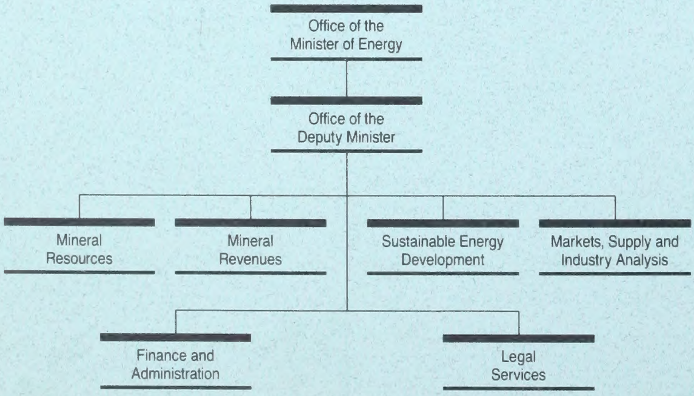
Mineral Revenues Division

is responsible for the management of programs established to generate and collect mineral revenues and for providing the assurance that these programs are consistent with provincial policies and the business environment. It manages a number of incentive programs that enhance exploration for, and extraction of, minerals in Alberta.

Mineral Resources Division

is responsible for developing and administering energy and other mineral leasing policies that are favourable for resource identification, delineation and development and that optimize Alberta's mineral supply and economic, environmental, and employment interests. As well, the division ensures that the Alberta Geological Survey effectively and efficiently supports provincial geological requirements, and consults with other governments on leasing related and geological survey policies and administrative practices.

Figure 1
Structure of Alberta Energy


Office of the Minister of Energy
Office of the Deputy Minister
Mineral Resources
Mineral Revenues
Sustainable Energy Development
Markets, Supply and Industry Analysis
Finance and Administration
Legal Services

Finance and Administration, and Legal Services

These divisions provide services to the departments of Energy and Forestry, Lands and Wildlife.

Financial Services
provides an administrative service to other divisions within the departments by recording all revenue received, accounting for all receivables and processing all payments. Further responsibility involves the development of a departmental expenditure reporting and forecasting system (DEFIS) to allow the department to better estimate expenditures and prevent overexpenditure of budgets.

Automated Information Systems
provides technical expertise and leadership in automated data and office automation systems.

General Services
provides a full range of support services to the operating divisions. It is responsible for file maintenance and control; creation of records systems, including maintenance of a computerized database, mail and messenger services; and micrographics. It is also responsible for the departmental reference library, editorial and printing services, graphics and forms, and operation of two information centres. It operates the Land Status Automated System (LSAS) and supplies surface and subsurface data regarding public land. It provides accommodation services to the department.

Human Resources
provides services to the departments in the areas of recruitment, classification, wage and salary administration, employee relations, staff and organizational development, security, and occupational health and safety. These are provided through the office in Edmonton and the Forest Technology School in Hinton.

Internal Audit
examines financial activities to ensure internal accounting and operating controls are functioning properly. Emphasis is placed on reviewing techniques used by management to evaluate program efficiency and effectiveness to guarantee results are consistent with objectives.

Legal Services Division
provides legal advice and assistance on all matters pertaining to energy.

Revenues

Gross Energy Revenue

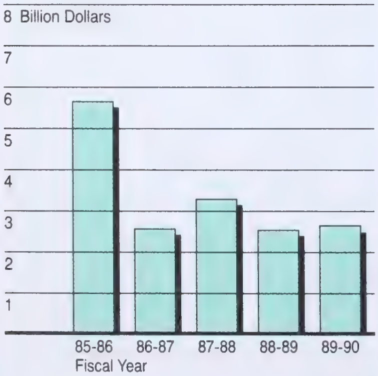
Crown revenue in 1989-90 from all mineral resources, predominantly oil and natural gas, was derived mainly from royalties, bonuses, and sales of Crown agreements. In total, 1989-90 revenues from mineral resources were $2.67 billion, compared to $2.56 billion in 1988-89. This gain was due mainly to a recovery in world oil prices during 1989-90. A five-year comparison of revenues is shown in Figure 2.

Petroleum Royalties

Gross Crown Royalty Share

The volume of Crown conventional crude oil produced in the 1989-90 fiscal year was 45.8 million cubic metres, a decline of approximately 2.2 million cubic metres from the 1988-89 level. The gross Crown royalty share was approximately 24.5 per cent of the volumes produced from Crown lands during the fiscal year.

Figure 2
Gross Energy Revenue



Source: Mineral Revenues Division

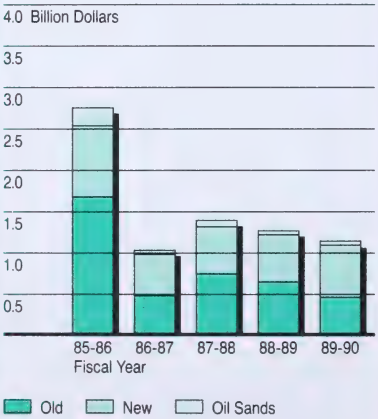
Royalty Holidays

The Crude Oil Royalty Holiday Program (CORHP) has encouraged exploration oil well drilling. The benefits earned are used over time and contribute to improved industry cash flow.

From program commencement in 1986 to October 31, 1987, five-year royalty holidays were earned. Then three-year royalty holidays were earned until April 30, 1989. One-year royalty holidays were then available until October 31, 1989. The government also placed a $1 million maximum per well on the benefits to be earned under CORHP from November 1, 1988, to program end.

In 1989-90, approximately 200 of the wells drilled in Alberta qualified for CORHP. This brought the number of wells approved under the program to over 4400. Benefits earned under CORHP for 1989-90 totalled $151 million.

Figure 3
Petroleum Royalties



Source: Mineral Revenues Division

Efficient Reservoir Management

Maximum recovery of fossil fuel resources is an integral part of responsible mineral resource management.

Enhanced "tertiary" recovery methods contribute to achieving maximum recovery. Such methods of recovery are more effective, but they are more costly to apply than secondary recovery methods, such as a waterflood.

The Government of Alberta recognizes that the Province receives additional royalties when enhanced oil recovery (EOR) methods are used. In the interest of responsible resource management, the Province encourages industry to apply the more costly and effective EOR methods where justified by the extra oil recovery.

The government uses the royalty mechanism to reduce the costs of applying EOR methods by industry by foregoing royalties in the early years of hydrocarbon and miscible flood EOR projects.

While additional costs incurred by industry are offset by the government, royalties are paid to the government on the subsequent increased production in later years. The royalties from expected increased production allow the government to cover the royalties it foregoès to encourage the use of EOR methods.

Net Royalty Volumes and Revenues

The net Crown royalty share, net of holiday well production and EOR relief, was 18.2 percent, a volume of 8.34 million cubic metres. Net royalty revenues totalled $1.158 billion, of which $27.7 million was oil sands royalty revenue. A five-year comparison of net petroleum revenues is shown in Figure 3.

Oil Sands Royalty Revenue

Oil sands royalty revenue for 1989-90 was $27.7 million, an increase of $8.7 million from 1988-89. The increase can be attributed to marginally improved net back prices and scheduled royalty increases under the phase-in provisions of the Crown agreements. A five-year comparison of royalty revenues from oil sands is shown in Figure 3.

Oil Production Surveillance

Alberta Energy continued to support the Energy Resources Conservation Board in this program which tests the completeness and accuracy of oil production reporting. Preliminary results from this year's program indicated that there continues to be little exposure to the Crown in terms of lost production.

Natural Gas and By-Product Royalties

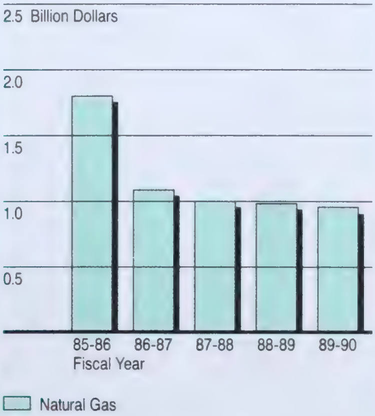
Net Crown Royalty Revenue

Net Crown royalty revenue in the 1989-90 fiscal year decreased $28 million to $960 million in a market that saw continued gas competition and erosion of the butane and sulphur markets. Relatively stable gross royalty revenue on gas and gas products was offset by processing cost increases of $30 million, resulting in a 2.6 percent decline in net crown revenues.

Natural gas revenues declined $14 million, primarily as a result of softer gas prices. Sulphur revenues declined $23 million due mainly to reductions in production and increased inventories. In contrast, gas liquids contributed a $36 million dollar increase in revenues despite a significant decline of 25 per cent in butane prices. Strong performance in the pentanes plus market — a 1.2 percent volume increase and a 19.7 per cent price increase — dominated the liquid revenues.

A five-year comparison of royalties from natural gas and by-products is shown in Figure 4.

Figure 4
Natural Gas and By-product Royalties



Source: Mineral Revenues Division

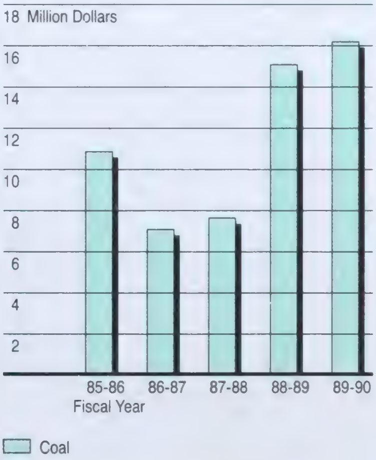
Coal Royalties

Coal royalty revenue for the 1989-90 fiscal year totalled $16.2 million, an increase of 10 per cent over the previous year. This reflected a stable but competitive marketplace and fairly flat world prices. A five-year comparison of royalties from coal is shown in Figure 5.

Other Mineral Royalties

Royalty revenue arising from the production and disposition of salt, sodium sulfate, gold and quarriable minerals increased to $300,000 for the 1989-90 fiscal year. In addition, a one-time adjustment of $200,000 from a prior period was made.

Figure 5
Coal Royalties



Source: Mineral Revenues Division

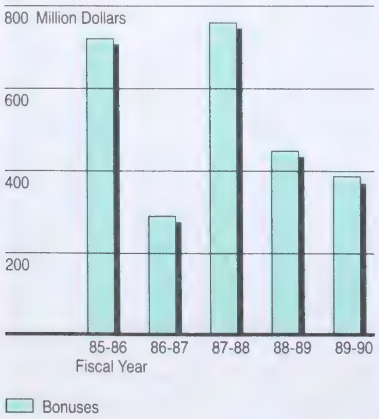
Sales of Crown Petroleum and Natural Gas Rights

Revenues from the sale of 5758 Crown petroleum and natural gas agreements (leases and licences) during the 1989-90 fiscal year totalled $387.7 million, 13 per cent less than in the previous year. More than 2.3 million hectares were covered in these agreements, 8 per cent fewer than were sold in 1988-89. A five-year comparison of agreement sales is shown in Figure 6.

Sales by direct purchases brought in $1.2 million. The average price per hectare for public offerings was $167, down from the $175 per hectare received in 1988-89.

The drop in sales resulted from reduced exploration activity due to uncertainty about future world oil prices. Asset rationalization and the continuation of corporate mergers and acquisitions contributed to the reduction in bonus amounts.

Figure 6
Crown Sales, Oil and Natural Gas Agreements



Source: Mineral Revenues Division

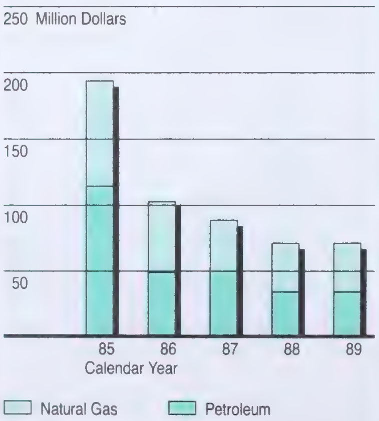
Freehold Mineral Rights Tax

The Freehold Mineral Rights Tax is calculated on a calendar year basis. It is calculated on the value of petroleum and natural gas produced in Alberta where those mineral rights are not owned by the Crown in right of Alberta or in right of Canada. The tax is attributed to the title owner.

In the 1989 taxation year, 4984 taxable titles resulted in tax assessments of $72.6 million. This total was made up of $38.1 million from petroleum titles and $34.5 million from gas titles. Net revenue, allowing for relief and tax revisions, was $68.8 million, a decrease of $2.0 million from 1988-89.

Because there is an exemption on the first $1600 of Freehold Mineral Rights Tax assessed, 12 721 titles paid no 1989 taxes. A five-year comparison of net tax assessments from freehold mineral rights sales is shown in Figure 7.

Figure 7
Freehold Mineral Rights Tax Assessment (Net)



Source: Mineral Revenues Division

Mineral Resource Agreements

Background

The Alberta Crown owns approximately 81 per cent of mineral resources within the province. The remaining mineral resources are owned "freehold" by private interests or by the federal government.

Although most are publicly owned, Alberta's mineral resources have always been privately developed. This pattern developed from the long-standing recognition that government's role is to provide a business climate in which private individuals and companies can apply their skills and risk their money in anticipation of a profit.

Therefore, Crown mineral resources such as oil, gas, oil sands, coal, metallic minerals, and others have traditionally been explored for and developed by the private sector. Before exploratory drilling and development may take place, an energy company must hold an exclusive agreement to the mineral rights with the Province of Alberta. These mineral agreements are issued by the Mineral Resources Division of Alberta Energy in the forms of permits, licences, and leases.

Land Status Automated System

The Land Status Automated System (LSAS) provides information to Alberta Energy on all Crown mineral rights agreements. These data, including lessees, land descriptions, and expiry dates, are used by the department in the administration of Crown mineral rights. During the 1989-90 fiscal year, the department developed Trespass, a reporting system to identify all wells producing from unleased Crown lands or zones. Publications were produced that provide descriptions and examples of available reports from the LSAS mineral subsystem.

Figure 8 shows the number of active exploration and development agreements in place in the year under review, and the number of hectares involved.

Petroleum and Natural Gas Agreements

Background

Upon request, undisposed petroleum and natural gas mineral rights for specific lands are advertised for sale. At the subsequent public offerings, the highest bidder acquires the exclusive rights, through licences and leases, to explore for, develop, and produce any petroleum and natural gas in areas and geological zones included in the agreement.

This arrangement provides Alberta with revenue in the form of a bonus and annual rental fees. The province receives further revenue from royalties on subsequent production.

1989-90 Licence and Lease Sales Highlights

The following four areas attracted significantly higher-than-average prices in 1989-90:

- Edson-Sundance Lake, with bids in excess of $7 million for 14 parcels, and an average per-hectare price of more than $2000.
- Zama, with bids in excess of $5 million for 22 parcels, and an average per-hectare price of more than $2800.
- Lodgepole, with bids in excess of $4 million for 10 parcels, and an average per-hectare price of $1000.
- Grand Forks, with bids of just under $2 million for 13 parcels, and an average per-hectare price of more than $1800.

Figure 8

Active Mineral Exploration and Development Agreements

	Number of Agreements				Thousand Hectares			
	March 31 1989	Issued	Cancelled	March 31 1990	March 31 1989	Issued	Cancelled	March 31 1990
Petroleum and Natural Gas Licences and Leases	58 963	6 450	5 241	60 172	26 831	3 030	3 641	26 220
Oil Sands Prospecting Permits	7	—	3	4	37	—	25	12
Oil Sands Leases	307	6	14	299	2 589	70	157	2 502
Coal and Coal Road Allowance	2 784	48	116	2 716	1 094	27	87	1 034
Metallic Mineral Exploration Permits	32	35	4	63	174	322	19	187
Metallic Mineral Leases	9	3	1	11	1	—	—	1
Other Minerals	147	46	11	182	20	5	1	24
TOTAL	62 249	6 588	5 390	63 447	30 746	3 454	3 930	29 980

Source: Mineral Resources Division

Lease Expiries and Continuations

When a lease expires, the lessee must apply for continuation based on proven productivity. Lands and zones considered by Alberta Energy to be productive are continued to the base of the deepest productive zone. In cases where the department considers that potentially productive rights exist, a one-year continuation is common.

When a well has been spudded within 90 days of lease expiry, and drilling is continuous, the department will continue the portion of the lease considered to be evaluated by the well. In these cases, continuation is usually for a 90-day period from the date the drilling of the well is finished.

The number of leases that expired during the 1989-90 fiscal year was 5051, comprising 1 896 502 hectares. This was a 12 per cent increase in expiries over 1988-89, but a 10 per cent decrease in area. The year-end status of 4681 primary-term leases, comprising 1 787 873 hectares, is reviewed in Figure 9. Figure 10 summarizes the year-end status of the remaining 370 leases, comprising 108 629 hectares, previously continued for a one-year period as potentially productive.

Total hectares expiring at the end of the primary term and reverting to the Crown increased to 78 per cent in 1989-90 from 73 per cent in 1988-89. The increase is seen as being due to the restructuring of oil and gas companies and the rationalization of their oil and gas properties. These actions, in turn, had an effect on exploration and development in the province.

Continued Leases

The Mines and Minerals Act provides for the monitoring of continued petroleum and natural gas leases. When productivity of a lease is in doubt, the Minister of Energy may serve a one-year notice stating that the lands or rights will revert to the Crown unless the lessee can provide new evidence of productivity.

In total, 685 such expiring notices were served during the 1988-89 fiscal year affecting 156 149 hectares. These notices were reviewed during 1989-90 and their year-end status assessed. The results of these productivity checks are shown in Figure 11. Due to the issuance of these notices, 50 new wells were drilled. An additional 30 wells were re-entered or recompleted and commenced production.

Figure 9
Expiring Petroleum and Natural Gas Leases
in 1989-90 Fiscal Year

	Hectares	(%)
Continued based on proven productivity	263 065	14.7
Continued for a one-year period as potentially productive	64 166	3.6
Continued because of drilling operations near the end of the term	40 953	2.3
Term extended due to circumstances beyond the lessees' control	10 816	0.6
Expired by their own terms	1 400 873	78.4
Applications for continuation being considered (unresolved)	8 000	0.4
TOTAL	1 787 873	100

Figure 10
Petroleum and Natural Gas Leases Previously Continued for One Year

	Hectares	(%)
Continued based on proven productivity	19 079	17.6
Continued because of drilling operations at end of term	12 192	11.2
Term extended due to circumstances beyond the lessees' control	320	0.3
Expired by their own terms	74 094	68.2
Applications for continuation being considered (unresolved)	2 944	2.7
TOTAL	108 629	100

Offset Drilling Obligations

When a well is drilled on rights not owned by the Crown, and is put on production, it has the potential to drain petroleum or natural gas from adjacent lands or geologic zones where the Crown does own mineral rights. To protect the interests of Albertans, the lessee of the Crown rights is given the option of drilling a well, paying compensatory royalty in lieu of drilling, or surrendering lands or rights to satisfy the offset obligation.

In the case of oil wells, the offset drilling obligation is automatic: once a well has produced oil for 90 days, the lessee must satisfy the obligation without prior notice from the Crown. Should the lessee fail to satisfy the offset obligation within the 90 days, a 30-day notice of default is served. In the case of natural gas wells, lessees are served with a 90-day notice of their responsibilities to satisfy the gas offset obligation.

Unit Agreements

A number of parties, including the Crown, can have an interest in a single oil or gas pool. Owners and operators have found unit agreements to be useful tools for maximizing oil and gas recovery and minimizing operating costs, while ensuring that each party recovers an equitable share of the resource. A unit agreement removes lease boundary limitations and streamlines the operation of wells and facilities.

The department has continued to participate in the negotiations for a new model unit agreement being conducted by the Petroleum Joint Ventures Association. When ratified by industry and government, this model will replace the 1972 version currently being used.

Proposed unit agreements are reviewed, negotiated, and executed by Alberta Energy. During 1989-90, nine new unit agreements became effective and two existing units were enlarged. At year-end the Crown was a party in 555 units. Of these, 324 unitized both oil and gas within a pool, 40 unitized oil only, and 191 unitized gas only.

Oil Sands Permits and Leases

Existing Leases

Each oil sands lease has a requirement for production at a specified capacity in order to enter its third term. In total, 299 oil sands leases now exist. One-third of these will reach the end of their second 21-year term between 1996 and 2008. These leases overlie 99 per cent of the surface-mineable and 51 per cent of the nonsurface-mineable oil sands reserves. Only one of these leases produced at or above its specified capacity in 1989-90.

Planning advanced for development of the OSLO (Other Six Leases Operation) project. This would bring another lease on production above its specified capacity by the end of its second term. Four other leases produced at less than their specified capacities during 1989-90, and the balance did not produce during the fiscal year.

Figure 11
Productivity Checks
Made in 1989-90 Fiscal Year

	Notices	Hectares	(%)
Further continued based on proven productivity (Including part continuations)	88	14 924	9
Continued due to drilling operations near the end of the term	24	4 192	3
Extended due to circumstances beyond the lessee's control	28	6 544	4
Returned to the Crown	545	130 489	84
TOTAL	685	156 149	100

Conventional and Non-Conventional Oil

Background

Prices

The price of oil went above US$20 per barrel in the first quarter of the 1989-90 fiscal year. This was due in part to supply disruptions. These included platform accidents in the North Sea and suspension of tanker traffic after the Exxon Valdez tanker went aground off the coast of Alaska.

Prices declined slightly in the second quarter. They increased in the third and fourth quarters as an unusually cold winter in Europe maintained a high level of demand. Also, concern over supply disruptions of the previous spring led to some stockpiling.

Production

In 1989, Alberta produced a total of 414 million barrels of crude oil. This comprised 339 million barrels of conventional crude and 75 million barrels of synthetic crude. Here is a breakdown of these figures:

Conventional crude oil:
282 million barrels of light-medium grades
57 million barrels of heavy oil
339

Synthetic crude from crude bitumen
54 million barrels from Syncrude
21 million barrels from Suncor
75

Note that of the conventional crude oil, 74 million barrels were produced from 48 projects from enhanced oil recovery; that synthetic crude accounted for 18 per cent of the 414 million barrels of crude oil produced; and that total bitumen production was 146 million barrels. Productivity, measured in barrels per day, varied by commodity:

- Conventional light and medium crude oil dropped 7.7 per cent to 780 000 from 845 000.
- Heavy oil climbed 8.0 per cent to 158 000 from 146 000.
- Synthetic crude oil climbed 2.5 per cent to 205 000 from 200 000.
- Crude bitumen stayed level at 130 000.

Figure 12 provides a comparison of daily production statistics for oil and bitumen over a five-year period.

Reserves and Potential

At the end of 1989, remaining proven reserves of conventional crude oil were 3.5 billion barrels, down 5.5 per cent from the 1988 level of 3.7 billion barrels. The remaining ultimate potential for production of conventional crude oil was estimated by the Energy Resources Conservation Board at 7.6 billion barrels. At current production levels, with no new exploration, this would represent a conventional crude oil supply of more than 10 years.

Remaining reserves of bitumen that can be retrieved with current technology were 3.4 billion barrels, representing a supply of 23 years. The remaining ultimate potential for production of crude bitumen was 30 695 billion barrels. At current production levels, this would supply oil for more than 63 000 years.

Figure 12
Average Daily Production of Crude Oil and Equivalents
in thousands of barrels per day

Year	Light & Medium	Heavy	Pentanes Plus	Synthetic Crude	Crude Bitumen
1985	870	113	100	164	52
1986	794	121	100	184	93
1987	819	132	106	181	116
1988	845	146	110	200	130
1989	780	158	113	205	130

Conventional Oil Supply Development

Alberta continues to move toward reliance on the market to encourage further investment in all facets of conventional oil supply development. In the 1989-90 fiscal year, the government continued to support a stable, attractive fiscal regime for the industry.

Royalty Tax Credit

After extensive consultation with industry associations and other interested parties, the government introduced a new long-term Alberta Royalty Tax Credit (ARTC) program effective January 1, 1990. Enacted for a five-year period, the ARTC program provides industry with tax credits equal to a percentage of royalty paid.

The program is sensitive to market price changes. It provides a tax credit of 85 per cent of the first $2.5 million royalty paid during periods of low prices. This decreases to 25 per cent of royalty paid during periods when the Alberta price exceeds $210 per cubic metre (US$30 per barrel).

The five-year term of the program offers significant improvements to the cash position of small companies that have been successful in their search for oil. In addition, it promotes greater certainty in financial markets, thus providing the smaller oil and gas companies greater access to development capital. The price sensitivity of the benefits also protects companies from uncontrollable and unpredictable short-term price changes. This, in turn, promotes the orderly development of the Alberta industry in accordance with the long-term basic economics of the Alberta resource.

Royalty Holidays and the General Royalty Regime

The Crown granted royalty holidays to 944 wells during the 1989-90 fiscal year. In total, 5550 wells have been declared eligible for crude oil royalty holidays since Alberta first introduced royalty holidays in May 1985. These wells continue to be eligible for royalty holidays until October 31, 1993, or until a well has received holidays for its full allowed number of production months or production volume.

At March 31, 1990, the total value of holidays granted on production since May 1985 was $457 million. The estimated value of holidays on production expected from April 1990 to program expiry in 1993 is $264 million.

During the 1989-90 fiscal year the government reviewed the need for continued royalty holidays or other development incentives for conventional crude oil. Its conclusion was that special holidays and development incentives were no longer required. Accordingly, wells drilled after November 1, 1989, are subject to full royalty.

The government has undertaken an extensive analysis and review of the long-term basic royalty regime to ensure that it is equitable and supportive of development consistent with market forces.

During the year, extensive discussions were held with industry on the optimal basic royalty regime. Special attention was given to developing ways of ensuring the long-term viability of incentives incorporated into the basic royalty regime. Particular attention was paid to the lower royalty rates for enhanced oil recovery schemes and for low-producing wells.

Non-Conventional Oil Development

As the supply of conventional light oil in North America is depleted, consumers will be forced to turn to sources of non-conventional energy. Fortunately, Alberta has an immense oil sands resource base that contains 308 billion barrels of potentially recoverable oil. (This is more than the 255 billion barrels of proven conventional reserves of oil in Saudi Arabia.)

During the past 20 years, commercial integrated and in situ oil sands projects have been brought on stream and now account for approximately 20 per cent of Canada's oil production. In May 1987, to facilitate further development of the oil sands resource, the Alberta Government established a heavy oil and oil sands strategy, and is currently proposing changes to the oil sands Lease Tenure system.

The strategy is to develop the resource for the maximum benefit of Albertans, while maintaining sensitivity to environmental and resource conservation. The province recognizes the technical and economic challenges involved. It recognizes also the need for governments to work cooperatively with industry to overcome some of the unique obstacles that face large-scale, long-term projects in a market-oriented environment. This strategy is outlined in more detail in Figure 13.

In the 1989-90 fiscal year, consistent with this strategy, Alberta Energy and Alberta Oil Sands Equity continued their involvement in Syncrude, the OSLO Commercial Project, and the Lloydminster Bi-Provincial Upgrader. Reports on these three projects can be found in Appendix 1.

Figure 13
Alberta's Strategy for the Development and Upgrading of Heavy Oil and Oil Sands Resources

Major Objective

To promote optimal development of Alberta's heavy oil and oil sands resources within the province using the best technology and with environmental and conservation sensitivity.

Strategy

The Alberta government has established a heavy oil and oil sands strategy targeted at accomplishing the development of these rich resources. The strategy recognizes the massive resource potential, the technical and economic obstacles involved in its development and the potential contribution of this development to the economies of Alberta and Canada. It recognizes the potential need for governments to work with industry to overcome the unique barriers that face large-scale oil sands and heavy oil projects within an overall market oriented environment. Decisions must be viewed from a long term perspective of further development and diversification of the Alberta economy.

Key Strategy Elements

1. Maximizing the value added to the resource here in Alberta;
2. Continuing diversification based on resource development;
3. Ensuring development of the resource occurs in an environmentally sensitive manner which recognizes the needs of the local communities affected by resource projects;
4. Ensuring that the people of Alberta, as resource owners, receive a fair share of the benefit of developing these resources;
5. Supporting research and development activities for new technology in the heavy oil and oil sands; and,
6. Maintaining an open door policy for project proposals from industry.

In addition, in cooperation with a 15-member consortium, the department undertook a study on the merits of a regional upgrader. The consortium included industry representatives, licensors, financial institutions, engineering contractors and government departments/agencies. The regional upgrader would maximize the value added in Alberta to the province's oil sands and heavy oil resources.

Performance and Activity in 1989-1990

Suncor had a record-breaking production year, with production levels averaging 58 700 barrels per day of synthetic crude oil. Syncrude, on the other hand, produced an average 141 700 barrels per day of synthetic crude oil, far below the plant's design capacity of 162 000 barrels per day. The cause of this drop was a major fire at the plant in December 1989.

More expansion phases to Esso's Cold Lake Project and BP/Petro-Canada's Wolf Lake Project were completed in mid-1989. Completion of Phases 6 and 7 at Cold Lake will increase capacity by 21 500 barrels per day. The two phases are tentatively scheduled to go into production in 1991-92. Phase 2 at Wolf Lake is designed to expand productive capacity by 15 000 barrels per day. It will be brought on stream when bitumen prices strengthen and stabilize.

Transportation and Markets

Oil Pricing

Alberta crude oil wellhead prices are directly related to the level of world prices as reflected by West Texas Intermediate crude oil. After declining during most of 1988, crude prices exhibited an upward trend during 1989. A five-year comparison of quarterly prices for West Texas Intermediate crude oil is provided in Figure 14.

Meanwhile, world demand for oil remained relatively strong. However, demand increased at a slightly slower rate than in 1988, due mainly to slower economic growth.

In November 1989, the Organization of Petroleum Exporting Countries (OPEC) signed a new production accord which provided for an increased production ceiling. Although OPEC has produced at rates above this ceiling, buoyant demand, coupled with declining production in the United States and North Sea supply disruptions, caused prices to remain firm throughout the year.

Markets

During 1989, of Alberta's crude oil and equivalent production:

- 24 per cent was consumed in the province;
- 39 per cent went to Canadian markets outside Alberta; and,
- 37 per cent was exported to the United States and offshore markets.

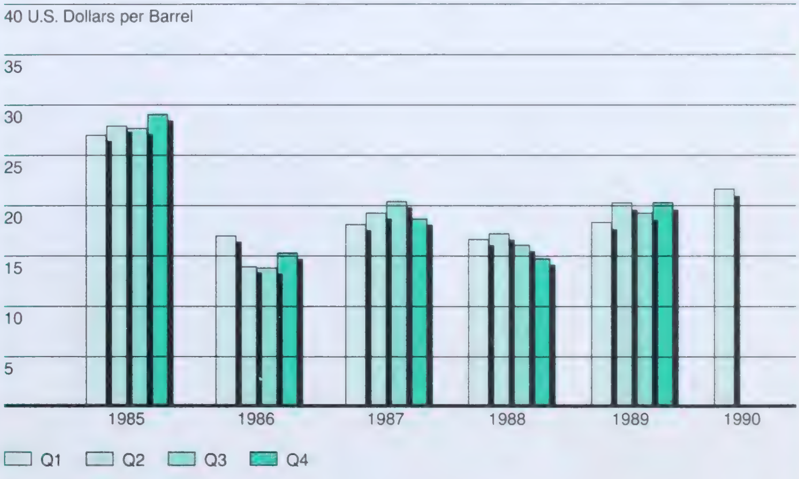
In recent years, exports have grown substantially and have doubled in the last five years to 1989's level of 522 000 barrels per day. Export markets consume a larger portion of Alberta conventional heavy oil and bitumen production than do Canadian markets. This market segment has been a very important factor in the growth of bitumen production during the mid-1980s.

Pipeline Capacity

For access to extra-provincial markets, producers depend upon reliable and cost-effective access to Interprovincial Pipe Line Limited (IPL) to the east, Trans Mountain Pipe Line (TMPL) to the west, and Rangeland Pipeline to the south.

Early in 1989, after several years of operating at maximum throughputs, IPL undertook a review aimed at assessing support for a two-phase, 200 000 barrels per day expansion to its system. The review indicated lower production of crude oil in the future. In turn, this is expected to restore an operating margin of about 10 per cent to the pipeline. It is perceived that this cushion will be maintained throughout the 1990s. Consequently, IPL has postponed expansion plans indefinitely.

Figure 14
West Texas Intermediate Crude Oil Prices



Source: Petroflash

In response to high levels of capacity use, TMPL completed a system expansion during the year. At a cost of about $60 million, the company installed several new tanks at Edmonton and at Burnaby, B.C.; constructed two new pump stations and made additions and modifications to eight others; and enhanced the environmental aspects of the Burnaby tank farm and the Westridge Marine Terminal in Vancouver.

The expansion enables TMPL to transport up to 37 800 barrels per day of heavy oil while continuing to supply the light-oil requirements of the Vancouver refineries as well as the refined-product needs of the refineries at Kamloops.

Pipeline Toll Developments

In November 1989, the National Energy Board (NEB) approved a new oil pipeline toll methodology for IPL. This consists of transmission surcharges for products which are heavier than, and credits for products which are lighter than light oil. The NEB approved IPL tariffs under the new toll structure which become effective on April 1, 1990.

In October 1989, TMPL applied for new 1990 tolls to compensate for forecast changes in throughput, rate base and cost of service for 1990. Following a period during the first part of 1990 in which interim tolls were used, the final 1990 toll structure becomes effective on April 21, 1990.

Alberta Energy was involved in reviewing IPL's expansion assessment. Also, the department worked with the Alberta Petroleum Marketing Commission in evaluating toll methodology issues and the fairness of tolls on extra-provincial pipelines.

Natural Gas and Petrochemicals

Background

Prices

During the year under review, gas prices showed very little net change from the previous fiscal year. The Alberta Average Market Price (AMP) of $1.59/GJ determined for March 1990, the last month of the 1989-90 fiscal year, was only slightly higher than the $1.58/GJ AMP determined for March 1989.

Prices were slightly more volatile than in the previous year. In April, May and June of 1989, prices were slightly higher than comparable 1988 prices. From July through December, surplus supply led to prices 6 or 7 cents lower than those in 1988.

From January 1990 through March, the ability of producers to withhold some gas from market, and strong winter demand, pushed prices back up to the levels of the previous year. Pipeline constraints, along with strong demand from the United States, caused an increase in the difference between the Alberta price and the American spot price.

Production

Production of natural gas in 1989-90 totalled 3027 billion cubic feet, an increase of 5 per cent over the previous year.

Reserves

At January 1, 1990, remaining established reserves totalled 58 555 billion cubic feet. The ratio of the established reserves inventory to annual production during the 1989-90 fiscal year was 19.3 to 1. At the same time, remaining established reserves increased 781 billion cubic feet. The reason for this increase was that during 1989-90 additions to reserves exceeded production by 26 per cent.

Natural Gas Supply

Incentives and Royalty Holidays

The Deep Gas Royalty Holiday Program introduced on June 1, 1985, continued to encourage exploration for gas pools below 2500 metres. The program helps to defray costs of drilling deeper than 2500 metres, and for each well the amount of relief is capped at an amount determined to cover these costs.

Royalty Regime

Alberta remains committed to a basic long-term royalty regime that gives Albertans an equitable share of profits from development of the province's gas resources. To maintain this equitable share, and avoid wasting resources by premature abandonment, Alberta offers a Low Productivity Well Allowance which reduces the royalty rate for wells that produce only small amounts of gas. As an owner of a share of the gas produced and as a partner with industry in resource processing, Alberta provides a Gas Cost Allowance for costs of processing its share of gas.

The provincial royalty regime also offers industry some protection from uncontrollable short-term changes in market price. This is effected through a price-sensitive royalty rate that decreases the percentage of royalty whenever prices go down.

Transportation and Markets

In the 1989-90 fiscal year, Alberta Energy concentrated its work in transportation and markets on the key constraints currently faced by the natural gas industry: pipelines and access to markets.

Proposed Pipeline Expansions

Since 1986, increasing export volumes have strained the limits of pipeline capacity. Pipeline expansion is required to increase Alberta production, allow producers to benefit from natural gas deregulation, and bring the market into balance.

A number of major pipeline expansions to eastern Canada and to various regions in the United States have been proposed. In mid-1989, producers evaluated two projects to serve New England: the Iroquois and Champlain. They voted in favor of the former. Alberta Energy played a role in analysing opportunities, sharing information with industry.

Following the vote, TransCanada Pipelines submitted a facilities application for a $2.6 billion, 831 mmcf/d expansion. This would serve markets in eastern Canada and deliver gas to pipelines in the northeast United States. Subsequently, the department began to analyse the application in readiness for hearings to be held in the spring of 1990.

The department also started work on a Market-Based Economic Evaluation (MBEE) of the pipeline expansion proposal. This would determine whether the discounted revenue from a contract backing the pipeline expansion could recover the discounted costs, based on a market-based valuation of gas reserve costs.

A number of pipeline proposals were also made for the supply of gas to California. Regulatory proceedings within that state resulted first in a preference for pipelines accessing supply sources in the United States. In response, Alberta Energy conducted an analysis in support of a submission by the Alberta Petroleum Marketing Commission (APMC) to the California Public Utilities Commission (CPUC). The final decision put all pipeline proposals on an equal footing.

Major pipeline proposals for the supply of gas to California include the Altamont project and the Pacific Gas Transmission expansion (which will source mainly Alberta gas), and the Kern River, WyCal and Mojave projects (which will source mainly American gas).

Cost-Benefit Analysis Discontinued

In November 1989, the National Energy Board (NEB) turned down a number of licences for the sale of gas to export markets. Primarily, this was because the licence applications failed to pass a cost-benefit analysis conducted by the NEB. This analysis imposed on the market the federal board's pricing assumptions. This was seen by the province to be inconsistent with a market-based approach to an analysis of export licences.

Alberta Energy reviewed the NEB's cost-benefit analysis, participated in workshops, and assisted the Alberta Petroleum Marketing Commission to prepare a submission to the federal board. Due in part to the efforts of the Alberta Government, the cost-benefit analysis was discontinued in evaluating export licences. Alberta supports this development as an important step toward deregulation.

Gas Procurement in California

During 1989, the California Public Utilities Commission (CPUC) developed a rule-making process that will restructure the California market, particularly in the northern part of that state. This has major implications for Alberta gas producers, particularly for the Alberta and Southern supply pool which, since 1960, has provided natural gas through the Pacific Gas Transmission pipeline to California.

Alberta Energy conducted an analysis in support of a submission by the Alberta Petroleum Marketing Commission to the CPUC. Toward the end of the year, a further analysis was made of the situation for use in a response to the CPUC rule-making process and in settlement discussions.

Contractual Supply Protection

During the year, the Minister of Energy and senior officials discussed with gas-consuming regions a contractual approach to supply security. A consensus policy on this matter, one that will address long-term requirements of essential users of natural gas, has yet to be reached with the Province of Ontario.

Near the end of the 1989-90 fiscal year, a decision was made to proceed with legislation supporting contractual supply protection within Alberta. This was introduced in the spring 1990 legislative session. This legislation will allow the Alberta Government to make regulations defining the minimum contract term for direct sales to classes of customers.

Removal Permits

Alberta Energy reviews gas removal permit applications for Ministerial approval on behalf of the Energy Resources Conservation Board (ERCB). The department manages the information on downstream arrangements filed with the Minister of Energy that concern removal permit applications in accordance with the Permit Conditions Regulation.

Ethane Markets

In cooperation with the ERCB and Alberta Economic Development and Trade, Alberta Energy moved toward completion of a provincial ethane policy. With the ERCB, the department reviewed industry comments on a draft information letter on ethane policy, consulted with industry, and made recommendations for policy refinements and completion of the legislation. The policy was introduced, considered and passed in the spring 1990 legislative session.

Coal

Background

Alberta has extensive deposits of raw coal, and has developed production of three general types of coal at eleven major mining locations.

Six mines produce subbituminous coal for the use of Alberta utilities. These mines, all located in the plains region, provide the basic fuel for electric power generation. The largest utility mine, the Highvale, is Canada's largest mining operation, producing over 20 per cent of the country's coal.

Two mines produce thermal bituminous coal. This is used in Alberta. It is also exported to areas where a high-heat value, low-sulphur coal is desired for combustion.

Three mines produce metallurgical coal, almost all of which is exported for use by the steel industry in Japan.

Prices

Export prices for metallurgical coal and for thermal bituminous coal are largely determined by the buying practice of a consortium of Japanese steel manufacturers, this being the single large buyer in the market.

Because of the desire of the Japanese to have multiple sources of coal, Alberta coal is paid a premium relative to coal from Australia. Japanese success in obtaining a lower price on coal from Australia led to a 10 per cent drop in prices offered for Alberta coal in the year under review.

Most of Alberta's subbituminous coal is not sold into a market. It is delivered to the province's utilities at a price which directly reflects the cost of extracting the coal.

Production

In 1989, Alberta produced 35 million tonnes of coal, up 5 per cent from 1988. The estimated value of 1989's output was $487 million, down 5 per cent from 1988.

Figure 15
Western Canadian Low-Sulphur Coal To Ontario
Membership, Objectives and Funding

Action Committee on Western Canadian Low-Sulphur Coal to Ontario Membership:

Chairman	• Deputy Prime Minister of Canada
Vice-Chairman	• Premier of Ontario
Members	• Premiers of Alberta, British Columbia and Saskatchewan

Objectives:

- Identify methods to improve the competitiveness of western Canadian coal for Ontario industry;
- Review all regulatory and fiscal aspects of coal transportation; and
- Pursue product-oriented research programs related to coal technologies.

Funding:

Government of Canada	$27 million
Government of Alberta	$16 million
Governments of British Columbia, Saskatchewan and Ontario	$11 million
Private Sector	$27 million
TOTAL	$81 million

Coal Supply Development

Alberta's coal royalty formula is based on costs, revenues and investment. Royalty share increases as a mine achieves greater economic success. The flexible royalty rate increases from a minimum of 5 per cent on small or marginally economic projects, to higher levels on more profitable operations. For new projects or significant mine expansions, the royalty rate is phased in over a five-year period.

In certain circumstances, the government may waive the minimum 5 per cent royalty. It has, in fact, done this on a temporary basis for three mines. For these, royalty is collected using the general royalty formula, which may result in zero royalty if costs from a mine exceed revenues.

Transportation and Markets

Coal to Ontario Initiative

The Action Committee on Western Canadian Low-Sulphur Coal to Ontario continued its work during the year. Its membership, objectives and funding are shown in Figure 15. The organization includes an Intergovernment Secretariat composed of one official from each of the five participating governments.

In conjunction with industry, the Secretariat has identified 14 projects relating to improvements in mine productivity, coal products, transportation, and taxes and regulatory costs. These projects are listed in Figure 16. In several, as can be seen, Alberta has assumed the lead role.

New Frontiers

Alberta Office of Coal Research and Technology

This office was established in 1984 to provide a focus for the Alberta Government's support for coal research and technological development assistance. It is a research and development planning and funding initiative. Details on the research programs supported through the organization, as well as project expenditures, are contained in its Annual Review, 1989-90.

Major Projects

The Alberta Office of Coal Research and Technology is participating in two major industry/government projects. In one, the objective is to design, construct and demonstrate a coal-fired boiler to generate steam for enhanced recovery of heavy oil. This could lead to a sizable new market for Alberta coal.

In the other project, two methods for transporting coal in a pipeline are being developed concurrently. In one method, coal is mixed with a liquid hydrocarbon called condensate; in the other, coal-water slurry systems are under development. If successful, either or both of these systems could allow delivery of Alberta coal by pipeline to markets in central Canada, as well as to Japan via west coast terminals.

Figure 16
Western Canadian Low-Sulphur Coal to Ontario
Projects Identified

	Mine Productivity Improvements	Project Leader	Funding Amount ($)
1	Thick Seam Extraction	Alberta	8.8 million
	Coal Product Improvements		
2	Air-Sparged Hydrocyclone	Alberta	0.39 million
3	HYDROSIZER for Fine Coal	Alberta	0.04 million
4	ARCO Flux	Saskatchewan	0.06 million
5	Compound Water Cyclone	Alberta	0.37 million
6	Tailings Reclamation	Alberta	0.14 million
7	Thermal Treatment	Saskatchewan	0.13 million
8	On-Line Coal Analyzers	Alberta	0.63 million
	Transportation Improvements		
9	Trans/COM (Coal-Oil-Mixture) Phase 2	Alberta	0.98 million
10	Rail Efficiencies	Canada	0.08 million
11	Thunder Bay Terminal Operations	Ontario	0.08 million
12	Laker Transportation	Ontario	0.08 million
	Improvements in Taxes and Regulatory Costs on Rail and Pipeline Traffic and on Coal Producers		
13	Taxes and Regulatory Costs on Rail and Pipeline Traffic	Ontario.	0.05 million
14	Taxes and Regulatory Costs on Coal Producers	Coal Assoc.	—
TOTAL (Rounded)			12 million

Other Minerals

Sulphur

Alberta is a world leader in the production of sulphur, producing more than 5 million tonnes annually. Most of the current output is from gas processing plants, which recovered 4.7 million tonnes in 1989. Oil sands plants recover 500 000 tonnes annually from their bitumen production, while oil refineries recover about 10 000 tonnes.

Most of Alberta's output is exported as pure sulphur. It is used in the manufacture of sulphuric acid for industrial use and in the production of fertilizer. In 1989, the average plant gate price for export was $75 per tonne, basically unchanged from 1988.

Crown royalty collected on sulphur is 16²/₃ per cent, less allowances for processing. Where sulphur is collected as a waste material in the production of natural gas, the processing allowance may exceed the value of the sulphur royalty. In such cases, the allowance is credited against royalty payable on natural gas.

The remaining proven reserves of sulphur in Alberta are estimated at 108 million tonnes. Of this total, 91 million tonnes are recoveries from natural gas and 17 million tonnes from bitumen. The remaining ultimate potential for sulphur production is much greater than this: 231 million tonnes from gas and 2195 million tonnes from bitumen.

Other Minerals

Alberta Energy collects production royalty on the extraction of salt from underground domes through individual agreements with the four operators engaged in salt extraction.

Exploration and development agreements are issued for several other minerals, including quarriable rock, ammonite shell, and metallic minerals such as gold and uranium. Minerals extracted during natural gas production pay production royalty as natural gas by-products.

Electricity and Utilities

Background

There are two major investor-owned electric utilities in Alberta. TransAlta Utilities Corporation (TAU) operates primarily in the southern and central areas of the province. It serves customers both directly and indirectly through wholesale contracts with the distribution systems owned by municipalities. Alberta Power Limited serves customers in the northern and eastern areas of Alberta. Electricity rates for both organizations are determined by the Public Utilities Board (PUB).

The City of Edmonton owns and operates a fully integrated electric utility, Edmonton Power, which serves customers within its corporate limits. The PUB is responsible for setting the price at which Edmonton sells electric energy to the Electric Energy Marketing Agency (see next section), but does not establish rates to the end customer.

The Alberta electrical system consists primarily of coal-fired plants. There are, in addition, a limited number of gas-fired plants and hydro facilities. Coal-fired plants are the least-cost source of power and provide 90 per cent of the electricity generated in the province.

During the 1989-90 fiscal year, demand for electric energy in Alberta increased 4.7 per cent. Electricity rates remained stable, maintaining Alberta's competitive advantage with rates that are among the lowest in Canada.

Electric Energy Marketing Act

The Electric Energy Marketing Act (EEMA) was introduced in September 1982, to provide a mechanism for reducing rate disparities between regions of Alberta.

TransAlta Utilities, Alberta Power and Edmonton Power are required to sell the electric energy they generate to the marketing agency at prices established by the PUB. These prices are based on the cost of generating and transmitting electric energy to the designated pooling interface points. EEMA pools these costs and resells the electric energy to the three utilities at an average price. This has reduced rate disparities, previously as high as 50 per cent, throughout Alberta.

During EEMA's phase-in years, shielding grants were available to the customers contributing to rate equalization. The shielding program has been gradually stepped down since 1982 and was discontinued in June 1989.

Interprovincial Cooperation

Agreements between Western Utilities

Planning and coordination among electrical systems has extended to neighboring provinces. Alberta currently has an intertie with British Columbia that can transfer more than 1000 MW and an intertie with Saskatchewan that can transfer 150 MW.

At the Western Premiers' Conference in June 1989, the premiers of Manitoba, Saskatchewan, Alberta and British Columbia agreed to begin joint studies of the potential benefits from increased coordination among the electrical systems in their jurisdictions. A task force of representatives from the four provinces was formed to undertake this project.

One study by B.C. Hydro and TransAlta Utilities (representing Alberta's electric utilities) identified potential benefits of up to $400 million (in 1990 dollars) from 1990 to 2010. The two utilities are negotiating principles of agreement contingent on government approval. The task force began a similar study of coordination potential between Saskatchewan and Manitoba.

Increased coordination between Alberta and Saskatchewan is not being considered at this time because of similarities in the two systems that preclude significant benefits.

Transboundary Water Management

British Columbia and Alberta are developing an Agreement on Transboundary Water Management. The key issue in Alberta is the impact of activity in British Columbia on water flows in the Peace River. This issue is under consideration from environmental as well as from resource and industrial use perspectives.

Water flows affect the potential for hydro projects in Alberta. For example, hydro projects on the Peace (near Dunvegan) and Slave rivers have been considered already as options for the generation of electricity in Alberta.

The target date to complete the Agreement is March 31, 1992.

Research

Small Power Projects

The Small Power Research and Development Program was introduced in October 1988. The aim is to facilitate the generation of electricity in Alberta through small projects using renewable biomass, wind, hydro, solar, geothermal and peat resources.

The program will also monitor production from small power projects. This will allow Alberta to determine the long-term contribution that small power can make to the provincial electrical system. The program will allow 125 MW of eligible small power projects to be interconnected to the system up to December 1994.

Response to the program through the 1989-90 fiscal year was considerable. The program has been fully subscribed and has a waiting list of projects to consider. Initial allocations have been approved for 20 MW of wind projects, almost 60 MW of biomass, and more than 45 MW of hydro, although it is uncertain to what extent these applications will proceed.

Alberta Energy assesses proposals for pilot projects under the Small Power Research and Development Program as well as proposals for other financial assistance. For example, the Southwest Alberta Renewable Energy Initiative has been granted a 10 MW allocation for a wind farm, and is currently reviewing applications by potential operators.

In 1989, the Small Power Producers Association of Alberta asked that the price paid for small power under the program be reviewed. Submissions by small power producers were assessed and the decision was made to implement the following recommendations:

- Increase the program price paid for small power from 5.2 cents/kW.h to 6.0 cents/kW.h starting in 1995.
- Provide an optional price which will be escalated to inflation. This price will start at 4.64 cents/kW.h in 1990, and be indexed starting in 1991.
- Enable the PUB to review all contracts longer than 10 years and determine the appropriate price for the balance of the contract.
- Allow small power producers under the program to be eligible under the Utility Companies Income Tax Rebate Act.

These recommendations were accepted and incorporated in the Small Power Research and Development Amendment Act. Amendments also increased eligible fuels under the program to include solar, geothermal, and peat resources. Fuels previously eligible under the program were renewable biomass, wind, and small hydro. The amendments to the Act were scheduled for introduction to the Legislature in May 1990.

Co-generation Study

During the year, a policy study was begun on co-generation. This is the simultaneous production of electric and thermal energy from a single fuel source.

The study will define the commercial potential for co-generation in Alberta and determine if there are any policy or regulatory constraints to development. A request for proposals has been completed and is being sent to firms for response. It is expected that the study will be completed in the summer of 1991.

Legislation

Public Utilities Board (PUB)

Plans were prepared to amend the Public Utilities Board Act. The intent will be to recover a portion of the PUB's operating costs through an annual fee charged to electric and gas utilities.

Trade

In general, the Free Trade Agreement (FTA) has had a positive impact on energy trade relations between Canada and the United States. The agreement has reinforced the commitment both governments have made to energy markets.

The FTA has deterred the introduction of regulatory barriers which might otherwise restrict trade in energy commodities.

A commitment to the principles of free trade has underpinned recent decisions by the National Energy Board and the United States Federal Energy Regulatory Commission. From the Canadian side, these decisions involved the review of electricity export policy and the use of social benefit-cost analysis in assessing export applications; from the American side, they involved the hearings for the Iroquois project and the Niagara Import Project Settlement.

While the impact of the FTA in the energy sector has in general been positive, some difficulties have been experienced in the natural gas sector as a result of recent decisions by the California Public Utilities Commission. The relevant issues have been the subject of ongoing discussions between the Government of Alberta and the relevant regulatory authorities in the United States.

To establish Alberta's priorities in energy trade matters, Alberta Energy has representatives on trade policy committees at Deputy Minister and departmental official levels. Input has been provided to the Government of Canada for bilateral trade talks with the United States on such matters as the accelerated elimination of tariffs. Input has also been provided for the Uruguay Round of GATT negotiations on such matters as the establishment of a new Subsidies Code.

Department officials have given information to interested parties enquiring about the provisions of the FTA as these pertain to the energy sector.

The recent trade talks between the United States and Mexico have been monitored, and the potential implications and opportunities for the Alberta energy sector have been assessed.

Department officials have been monitoring the political and economic changes occurring in the Union of Soviet Socialist Republics and Eastern Europe. Also, studies were undertaken on the potential trade and investment opportunities for Alberta energy companies in these countries.

Environmental Protection, Efficiency and Technology

Background

The environmental concerns that began to dominate the energy agenda in 1988-89 continued, even escalated, in the 1989-90 fiscal year. These concerns pivot on the nature and level of energy consumption needed to sustain our current lifestyle. Specifically, they result from our heavy reliance on fossil fuels for energy production, and on the emissions from the consumption of these fuels by industry and business, transportation services, and residential buildings.

Integrated Resource Management

Alberta Energy subscribes to the philosophy of integrated resource management. This offers the department the opportunity to review the land and resource management policies, programs, and objectives of participating government agencies. The intent is to ensure that they are in harmony with the government's overall plan for the management of Alberta's mineral resources. The department reciprocates by sharing information with these agencies on energy resource management and development initiatives.

Integrated resource management is achieved by Alberta Energy through a number of methods, the most formal of which is its participation in the province's Integrated Resource Planning program. This is a cooperative and comprehensive approach to decision making on the use and management of public land and resources. Information about resources is considered in the process, as are the views of interested government agencies, municipal authorities, interest groups, and the public.

The Mineral Resources Division coordinates Alberta Energy's participation in the program. In the 1989-90 fiscal year, the division worked to ensure that sufficient opportunities were given for industry to gain access to, explore and develop the mineral resources in each planning area. During the year, progress was made on 13 integrated resource plans, one of which was formally approved for implementation.

Alberta Energy also participates in integrated resource management through its role in several interdepartmental referrals. These range from preliminary disclosures to government by proponents of major energy development proposals, to environmental impact assessments submitted to Alberta Environment. The review of these referrals is coordinated by the Mineral Resources Division.

Alberta Energy has been involved in a special initiative called the Prairie Conservation Action Plan, the primary objective of which is to conserve the biological diversity found in the Canadian prairies. Departmental participation in this program ensures that appropriate consideration is given to energy and mineral resource potential in areas considered for protection.

Fossil Fuel Consumption

Carbon Dioxide Emissions: National

At the meeting of energy ministers in Toronto, in August 1989, the Federal/Provincial/Territorial Task Force on Energy and the Environment reported that a recommendation for the reduction of carbon dioxide emissions to 20 per cent below 1988 was clearly ambitious. The recommendation had been made by the Toronto Conference on the Changing Atmosphere.

The ministers, nonetheless, agreed to pursue national and regional initiatives that would reduce greenhouse gas emissions to levels that would be socially, economically, and environmentally acceptable to society.

The ministers directed the Task Force to prepare a regional assessment of carbon dioxide emissions, the potential for reducing these emissions, and the potential impacts of such reductions. The assessment report is to be presented at a special meeting of the energy ministers on April 2, 1990, in Kananaskis. Alberta Energy has taken an active role in the work of the Task Force and in preparation for the Kananaskis meeting.

Carbon Dioxide Emissions: Alberta

Parallel to the national Task Force's study of carbon dioxide emissions, Alberta's Energy Efficiency Branch prepared an updated inventory of energy-related carbon dioxide emissions in the province.

The branch also completed a preliminary analysis on the potential for reducing carbon dioxide emissions in Alberta. This examined the potential for energy conservation and fuel substitution measures that would reduce both energy demand and carbon dioxide emissions. The greatest potential for energy-use reductions lies in the industrial and transportation sectors. Further work is being undertaken and a final report is expected to be available in August 1990.

Clean Air Strategy for Alberta

On March 15, 1990, the province's Ministers of Energy and of the Environment announced that they would jointly undertake a consultative process to develop a strategy for managing Alberta's energy-related air emissions.

The process is designed to generate informed discussion on air emissions resulting from the production and use of energy in Alberta. Materials to be discussed include sulphur dioxide and greenhouse gases, such as carbon dioxide, nitrogen oxides, volatile organic compounds and methane. The process has two major aims:

- To help identify and clarify the impact of energy-related emissions on the environment.
- As part of a Clean Air Strategy for Alberta, to outline practical and achievable actions that can be taken by energy producers and consumers.

Sulphur Emission Control Assistance Program

The regulations governing the Sulphur Emission Control Assistance Program (SECAP) were passed in November 1989. Guidelines outlining the specifics of the program, such as qualifying criteria and benefits, were issued in December 1989.

At March 31, 1990, the department had received three SECAP applications. These are under review and, if approved, credits will be established to be applied against natural gas and by-product royalties.

Integrated Gasification Combined Cycle

Integrated Gasification Combined Cycle (IGCC) is a process for using coal to produce electricity and generate fewer emissions than coal-burning processes used today. It is also more efficient and capable of producing less carbon dioxide. Indications also point to lower costs.

Several IGCC processes are at various stages of development in Europe, Japan, and the United States.

In this country, the Canadian Coal Gasification Technical Committee is sponsoring a research program to design and build a 100 MW prototype IGCC plant by 1994. The committee includes representatives from Alberta Energy and from several Alberta coal-producing companies and utility companies. The program is also evaluating various Canadian coals for their suitability in various gasification processes.

The Alberta Government participates in this program through the Office of Coal Research and Technology, with funding from the Alberta/Canada Energy Resources Research Fund. The IGCC plant design and the program's construction elements have been absorbed by the Secretariat to the Action Committee on Western Canadian Low-Sulphur Coal to Ontario.

This Secretariat, in January 1990, received a submission from the Coal Association of Canada which proposed that the association undertake a feasibility study on the technology, economics and location of an IGCC plant. The study would include a sensitivity analysis of several CO_2 removal technologies. The Secretariat is considering the proposal. A decision will be made in October 1990.

The study would cost $1 million, the provincial government's share being approximately $111 000. Funding would be through the existing Coal to Ontario Program.

Energy Efficiency: On-Site Audits

Energy audits, conducted on request for business, industry and institutions, identify potential energy-efficiency improvements through on-site analysis. Staff use two computer-equipped Energy Buses to monitor energy use, determine steps to reduce energy cost, and make appropriate recommendations. In the 1989-90 fiscal year, 116 buildings of various types were visited. Potential annual energy cost reductions of $1.79 million (15 per cent) were identified, involving easily implemented measures.

During its 9-year existence, this free service has audited some 2000 buildings throughout Alberta. Aggregate data from energy audits are shared with the private sector and at conferences and seminars.

Energy Efficiency: Information Programs

Alberta Energy conducts information programs which address residential, school and transportation concerns on energy efficiency. In the year under review, home owners and builders made more than 4000 calls to the Energy Matters telephone inquiry service, which answers questions on home energy efficiency. More than 100 000 copies of publications were distributed through building supply, hardware and other outlets.

More than 11 000 Alberta students received the energy-saving message in their classrooms through dramatized presentations by Alberta Energy staff. Alberta educators received instructional and curriculum resources to help them teach the importance of energy efficiency to the next generation of energy consumers.

Approximately 150 000 Alberta drivers received fuel economy calculators and other materials to help monitor and improve fuel efficiency.

Fossil Fuel Alternatives

Southwest Alberta Renewable Energy Initiative

In 1986, the provincial government agreed to help establish a renewable energy research centre in the Pincher Creek area. In addition to encouraging development of solar and wind energies that are abundant in the area, the initiative was seen as a move toward diversification of the region's economy.

Although Alberta Energy staff developed several possible methods for setting up a research program, budget restraint prevented any progress until 1988. In that year, the Southwest Alberta Solar, Wind and Renewable Energy Advisory Board was appointed to make recommendations on the program.

The board submitted its report in March 1989, and in December 1989 Energy Minister Rick Orman announced the creation of the Southwest Alberta Renewable Energy Initiative (SWAREI).

SWAREI comprises a three-year funded program of research, development and demonstration projects, with an annual budget of $1 million. Also, a commitment in principle was made to continue the program for 10 years.

A Ministerial Order establishing the Alberta Office of Renewable Energy Technology is being prepared. The Order will also name the board of directors that will manage SWAREI. Preparations are in hand to open an information centre in Pincher Creek.

Hydrogen Technology Development Initiative

In 1987, the federal government released a study recommending the establishment of a National Mission to foster hydrogen technology development in Canada. Alberta, through its Energy Minister, informed the federal government that the province wished to participate in any industry-led national mission requiring partial funding from the federal and provincial governments.

Progress on reaching agreement with the federal government was slow. Consequently, in 1988, as both the largest producer and user of hydrogen in Canada, Alberta embarked on its own Hydrogen Technology Research Program. The program is funded by the Alberta/Canada Energy Resources Research Fund (A/CERRF).

Concurrently, an Alberta Hydrogen Task Force formulated and presented several recommendations to the Minister of Energy regarding Alberta's participation in the National Mission, assuming it is eventually established. The Task Force includes representatives from Alberta Energy, Alberta Federal and Intergovernmental Affairs, the Alberta Research Council, and the Alberta Oil Sands Technology and Research Authority.

It has been recommended to the A/CERRF Committee that Alberta's Hydrogen Technology Research Program be continued in the 1990-91 fiscal year.

Meanwhile, the provinces of Quebec, Ontario, Alberta, and British Columbia, and the federal department of Energy, Mines and Resources, have drafted a plan for cooperation on a limited program of pre-competitive research. This would require $200 000 from A/CERRF in the 1990-91 fiscal year. The proposal will be discussed by the A/CERRF Committee.

In January 1990, Premier Vander Zalm of British Columbia wrote to Premier Getty and invited Alberta to participate in a bilateral hydrogen research program. An initial meeting was held in Victoria in March 1990.

Finance and Administration, and Communications

A common Finance and Administration organization provides the following support services for the departments of Energy and Forestry, Lands and Wildlife: information systems, human resource management, general services, financial services and internal audit.

Automated Information Systems

At March 31, 1990, Alberta Energy and Alberta Forestry, Lands and Wildlife had 85 automated information systems in operation. These system activities cost $13.7 million in the 1989-90 fiscal year.

During the period under review, the departments continued to introduce new systems and to improve existing ones, through integration of computer applications and data. Development continued on the Mineral Revenues System (MRS) relating to gas regulation, on incentives management, and on an accounting component for mineral taxation. This work will continue into 1990-91.

A major move into integrated office system (IOS) technology was coordinated. More than 250 users were trained and connected to IOS. Also, approximately 40 Correspondence Management System workstations were installed and integrated with IOS.

Further efforts were made to increase microcomputer effectiveness. Training programs were held for approximately 60 microcomputer site administrators.

The Departmental Expenditure Forecast Information System (DEFIS) was installed in 18 head office and 40 regional locations. DEFIS components consist of manpower forecasting, supplies and services forecasting, expanded financial reporting, and budget adjustment. The system provides improved expenditure monitoring and forecasting designed to optimize budget allocations within the departments.

Replacement of the Main Accounts Receivable System (MARS) began. The first phase outlined the scope and requirements of the replacement project. This was completed in November 1989. The next phase will recommend a system architecture and revisit the cost-benefit analysis. It will be completed in 1990-91. The new system will integrate more closely with existing corporate systems, such as Mineral Revenues, Timber Records Enumeration and Evaluation, and LSAS (Land Status Automated System).

Equipment and software were acquired to replace FROLIC (File Room On Line Information Control), the departmental records management system. The new system will operate on a microcomputer local area network platform.

Human Resources

Human Resources undertook major initiatives to enhance the ability of the Personnel Information System to supply more information to line divisions. Also, a strategy was developed for the Human Resource Information System. This included the upgrading of current systems and the implementation of integrated office automation technology.

Human Resources coordinated efforts throughout the department to support the government-wide Administrative Support Class Series Review. This was intended to develop a class series encompassing similar kinds of administrative support functions. In Alberta Energy, 361 positions were involved in the review's implementation.

In an ongoing effort to ensure a competent and skilled work force, increased emphasis was placed on individual development opportunities. Secondments within the department and to external private sector organizations increased. Opportunities were initiated through the department and through government-wide programs such as the Career Assignment Program and the National Defence College.

Human Resources played a major role in the reorganization which was initiated to enable Alberta Energy to respond better to changing public and industry needs. The changes included formation of the Sustainable Energy Development Division and of the Markets, Supply and Industry Analysis Division. Also, the Electrical Utility Policy Branch and the Electric Energy Marketing Agency were transferred to Alberta Energy from Alberta Transportation and Utilities.

General Services

General Services provided administrative support during the year in these activity areas:

Accommodation services: The first phase of a plan was completed to consolidate the departments' operational space into fewer, well-planned locations. Historically, departmental units were established in numerous, non-central locations, making program delivery more difficult.

Crown land data services: The primary focus continued to be on management of the Land Status Automated System (LSAS). Further enhancements were implemented, the most significant being Trespass. This uses data from LSAS, the Mineral Revenues System, and the Energy Resources Conservation Board to identify producing Crown wells on unleased lands.

Agreements were established with Alberta Environment and Alberta Public Works, Supply and Services to receive and update data related to their ownership and administration of Crown land.

Extension services: Focus was placed on developing service strategies through client input and program ratification. The Library Services and Publications Distribution Centre strategies have been completed; the Information Centres' strategy is under review by senior management.

Corporate records management: A concentrated effort was placed on implementing two initiatives. The first involved development of a standardized subject filing system that was centrally managed by Corporate Records Management, but located in individual operating areas. The second initiative was expansion of the records retention and scheduling program. An evaluation of these initiatives indicated they are meeting departmental needs.

Financial Services

Early in the 1989-90 fiscal year, Financial Services set up an electronic interface between two large computer systems, the Main Accounts Receivable System (MARS) and the Land Status Automated System (LSAS). This interface eliminated two operations: duplicate keying into the MARS system, and the preparation documents used in keying in first-year charges. Establishment of the interface eliminated eight permanent positions.

Detailed studies of the present MARS system and recommendations on its replacement were performed during the year. As a result, much of the preparatory work for the replacement of MARS was completed. A cost-benefit analysis is being prepared for presentation next year.

The Departmental Expenditure Forecast Information System (DEFIS) was expanded to include 58 installations, of which 40 are in regional locations throughout the province. DEFIS allows the divisions in Alberta Energy and Alberta Forestry, Lands and Wildlife to monitor expenditure forecasts and report on the departments' ongoing financial status. In the latter half of the fiscal year, a budget adjustment module was developed, tested and installed. Also, development of a subsystem to the existing manpower module to track wage employees was started.

Several financial policies and procedures were written, reviewed and distributed. Of these, the Revenue/Accounts Receivables policy and procedure was written to clarify the roles and responsibilities of divisional and operational staff. By defining these responsibilities, the development of the MARS replacement system will be much easier. In addition, procedures for SPPO (Self-Paid Purchasing Order), for Petty Cash, and for Payment of Utilities Bills were updated and distributed.

Three training sessions were held during the year to help staff use the Financial Policies and Procedures and the Contracts User manuals. Also, all policy and procedure manuals were updated and maintained.

Internal Audit

During the reporting period, Internal Audit provided management with independent assessments of the adequacy of controls and practices governing implementation and operation of computer-based systems. Particular emphasis was placed on microcomputers.

Audits were completed according to plan, including special reviews for management. Comprehensive management audits were finalized for two major divisions and more recommendations were implemented. The status of recommendations from earlier audits was reviewed to ensure that corrective action had been taken.

Communications Branch

In 1989-90, the Communications Branch assisted with Alberta Energy's participation in the World Energy Congress held in Montreal in September 1989. A major display, titled "Alberta in the Global Energy Spectrum", was produced for the conference, along with a companion booklet outling the energy industry in the province.

The branch coordinated the production of a departmental video called "Energy Plus!", which outlines the department's role and activities, and the energy industry in Alberta.

The branch prepared and distributed news releases and media backgrounders and coordinated several news conferences, most notably for the unveiling of the Southwest Alberta Renewable Energy Initiative in December 1989. The branch also worked with the Energy Efficiency Branch in producing several publications and programs for the promotion of energy conservation, and the Research and Technology Branch in designing and producing new booklets in the Technology Transfer series.

The branch provided a variety of production-related services, including the coordination of printing, graphic design, photography, exhibits and displays, and advertising services.

The branch played a major role in coordinating the communications and media relations activities in support of the federal-provincial-territorial meeting of energy ministers in Kananaskis. The branch was also heavily involved in the communications planning undertaken in support of the Clean Air Strategy for Alberta initiative.

Appendixes

Appendix 1
Major Projects

Syncrude

Background

The Syncrude oil sands project started up in 1978 with an initial design capacity of 109 000 barrels per day of synthetic crude. Since then, plant capacity and production have increased significantly. The reasons include a reduction in bottlenecks, a program to add capacity, and increased operating efficiency which lessened the need for maintenance shutdowns. Syncrude's current design capacity is 162 000 barrels per day.

Alberta has a vested interest in Syncrude. Through Alberta Oil Sands Equity, the province holds a 16.74 per cent equity interest in the project. Alberta also receives a Joint Venture Payment equal to 50 per cent of the project's deemed net profits in lieu of a royalty. Since Syncrude's start-up, Alberta has received over $1 billion in Joint Venture Payments. The Syncrude project also directly provides more than 4500 permanent and 1000 contractor jobs.

1989-90 Highlights

Alberta Oil Sands Equity's investment in Syncrude reported a profit of $22.5 million for the 1989-90 fiscal year, compared to a loss of $3.1 million for 1988-89. The difference was mainly due to an increase in oil prices.

At March 31, 1990, Alberta's participation in the project was $519 million. This consisted of net cash advances of $83 million and accumulated income of $436 million.

OSLO Commercial Project

Background

The OSLO Commercial Project is an integrated oil sands mining and upgrading operation located on Lease 31, 60 kilometres north of Fort McMurray. The project is expected to produce about 77 000 barrels per day of synthetic crude oil and to cost $4.1 billion (in "as spent" dollars). Its start-up is currently scheduled for 1997.

OSLO is an acronym for the Other Six Leases Operation. The name comes from the other six leases owned by the original Syncrude partners.

On September 24, 1988, a Statement of Principles was signed between the OSLO Consortium and the governments of Canada and Alberta outlining government assistance for the OSLO project. In this document, the federal and Alberta governments were to provide a combination of loan guarantees, interest assistance and financial incentives to share the project risk with the consortium. In return, the governments would receive a Net Profits Interest in the project. Alberta, as owner of the resource, would also receive royalties.

1989-90 Highlights

On February 20, 1990, the federal government cut funds for construction of the project from its budget; it will provide funds only for completion of the engineering studies. For this, Ottawa has committed to provide 35 per cent of the costs incurred, to a maximum of $45.5 million. The engineering studies will be completed by December 31, 1991, and are estimated to cost $130 million.

Since the federal government withdrew its financial support, Alberta has been working with the consortium to ensure that the project proceeds through the engineering phase and into construction.

Alberta Oil Sands Equity manages the Alberta Government's 10 per cent equity interest in the OSLO Commercial Project. At March 31, 1990, Alberta's equity participation in it was $6.5 million.

Lloydminster Bi-Provincial Upgrader

Background

On September 2, 1988, the governments of Canada, Alberta, and Saskatchewan signed a joint venture agreement with Husky Oil Limited to finance, build and operate an upgrader near Lloydminster. Each of the joint venturers will contribute to the $1.27 billion capital cost of the project, in proportion to its participating interests. Alberta Oil Sands Equity manages Alberta's 24.17 per cent equity interest in the project and will contribute $305 million of the total cost.

The bi-provincial upgrader will encourage heavy oil development and upgrading in western Canada, where the resource is produced, rather than ship jobs and incremental value down the pipeline to the consuming areas. The upgrader will process heavy oil and bitumen from Alberta and Saskatchewan and produce 46 000 barrels per day of high-quality synthetic crude oil. This upgrading capacity will, in turn, increase market capacity for further development of heavy oil and bitumen production.

The project is expected to create about 5800 person years of employment during its four-year construction phase. Once it is on stream, the upgrader will directly employ about 300 people.

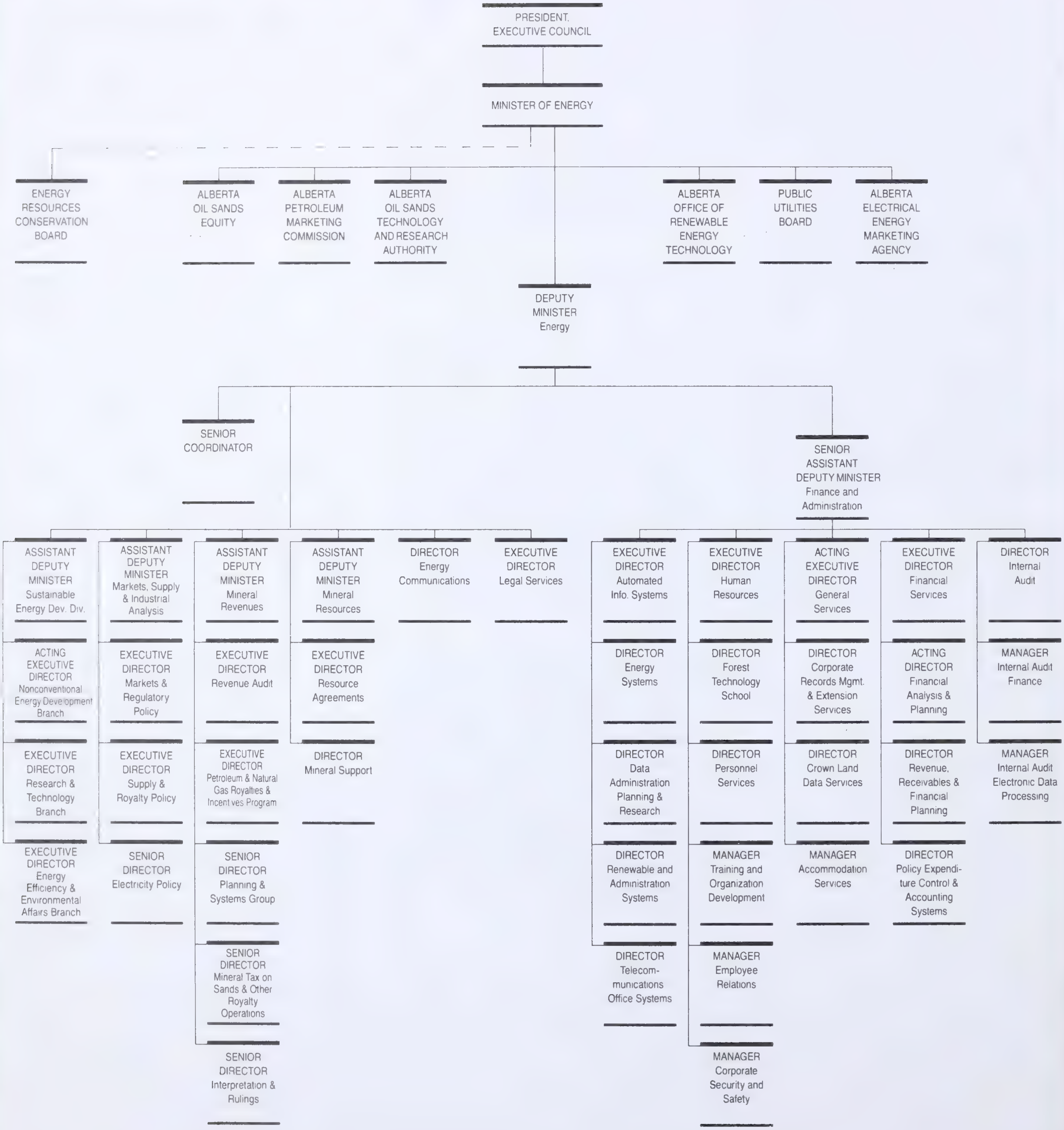
Construction began in late 1988 and is proceeding on schedule; at March 31, 1990, more than 50 per cent of the detailed engineering was complete. Start-up is planned for the end of the third quarter of 1992, with full capacity reached by 1995.

1989-90 Highlights

At March 31, 1990, $246 million of the $1.27 billion capital cost had been incurred. This figure includes $100 million spent before the joint venture agreement was signed. Alberta's share of these expenditures was $59 million, which represents a 24.17 per cent equity interest.

Appendix 2

Alberta Energy Organization Chart


PRESIDENT, EXECUTIVE COUNCIL
MINISTER OF ENERGY
ENERGY RESOURCES CONSERVATION BOARD
ALBERTA OIL SANDS EQUITY
ALBERTA PETROLEUM MARKETING COMMISSION
ALBERTA OIL SANDS TECHNOLOGY AND RESEARCH AUTHORITY
ALBERTA OFFICE OF RENEWABLE ENERGY TECHNOLOGY
PUBLIC UTILITIES BOARD
ALBERTA ELECTRICAL ENERGY MARKETING AGENCY
DEPUTY MINISTER Energy
SENIOR COORDINATOR
SENIOR ASSISTANT DEPUTY MINISTER Finance and Administration
ASSISTANT DEPUTY MINISTER Sustainable Energy Dev. Div.
ACTING EXECUTIVE DIRECTOR Nonconventional Energy Development Branch
EXECUTIVE DIRECTOR Research & Technology Branch
EXECUTIVE DIRECTOR Energy Efficiency & Environmental Affairs Branch
ASSISTANT DEPUTY MINISTER Markets, Supply & Industrial Analysis
EXECUTIVE DIRECTOR Markets & Regulatory Policy
EXECUTIVE DIRECTOR Supply & Royalty Policy
SENIOR DIRECTOR Electricity Policy
ASSISTANT DEPUTY MINISTER Mineral Revenues
EXECUTIVE DIRECTOR Revenue Audit
EXECUTIVE DIRECTOR Petroleum & Natural Gas Royalties & Incentives Program
SENIOR DIRECTOR Planning & Systems Group
SENIOR DIRECTOR Mineral Tax on Sands & Other Royalty Operations
SENIOR DIRECTOR Interpretation & Rulings
ASSISTANT DEPUTY MINISTER Mineral Resources
EXECUTIVE DIRECTOR Resource Agreements
DIRECTOR Mineral Support
DIRECTOR Energy Communications
EXECUTIVE DIRECTOR Legal Services
EXECUTIVE DIRECTOR Automated Info. Systems
DIRECTOR Energy Systems
DIRECTOR Data Administration Planning & Research
DIRECTOR Renewable and Administration Systems
DIRECTOR Telecommunications Office Systems
EXECUTIVE DIRECTOR Human Resources
DIRECTOR Forest Technology School
DIRECTOR Personnel Services
MANAGER Training and Organization Development
MANAGER Employee Relations
MANAGER Corporate Security and Safety
ACTING EXECUTIVE DIRECTOR General Services
DIRECTOR Corporate Records Mgmt. & Extension Services
DIRECTOR Crown Land Data Services
MANAGER Accommodation Services
EXECUTIVE DIRECTOR Financial Services
ACTING DIRECTOR Financial Analysis & Planning
DIRECTOR Revenue, Receivables & Financial Planning
DIRECTOR Policy Expenditure Control & Accounting Systems
DIRECTOR Internal Audit
MANAGER Internal Audit Finance
MANAGER Internal Audit Electronic Data Processing

Financial Statements

Financial Statements

Alberta Energy
Statement of Revenue
For the Year Ended March 31, 1990
(Unaudited)

	1989-90 ($000)	1988-89 ($000)
Royalties		
Oil, Conventional and Synthetic, and Products	$1 158 256	$ 957 088
Natural Gas and Products	960 586	988 706
Coal and Other	16 672	15 204
	2 135 514	1 960 998
Crown Sales, Oil and Natural Gas Agreements	389 082	449 541
Rentals and Fees		
Oil and Natural Gas, and Synthetic Oil	72 443	73 995
Coal and Other	3 118	2 889
	75 561	76 884
Mineral Taxes	68 832	70 861
Expenditure Recoveries		
Alberta Petroleum Incentive Program	0	2 529
Other	614	618
	614	3 147
Miscellaneous	485	1 277
Gross Revenue	**2 670 088**	**2 562 708**
Less Incentive Programs		
Exploratory Drilling	272	402
Geophysical	92	178
Geophysical Assistance	11	0
	375	580
Net Revenue	**$2 669 713**	**$2 562 128**

Prepared by General Accounting Branch
Financial Services Division
August 14, 1990

Alberta Energy
Statement of Expenditures
For the Year Ended March 31, 1990
(Unaudited)

	1989-90 ($000)	1988-89 ($000) (Restated)
Finance and Administration Services Division	$ 6 430	$6 260
Other Divisions		
Mineral Resources	6 403	7 525
Mineral Revenues	13 125	12 353
Policy Analysis and Planning	4 382	2 772
Scientific and Engineering Services	9 588	8 164
Alberta Petroleum Incentive Program	—	2 446
	33 498	33 260
Executive Offices	961	937
Special Warrants and Special Programs		
Assistance for Oil Sands Projects	10 550	36 113
Electric Energy Marketing	4 910	13 495
Investment in Smoky River Coal Limited	4 300	—
Mineral Resources Wainwright Military Reserve	—	750
	19 760	50 358
Total Expenditures	**$60 649**	**$90 815**

Prepared by General Accounting Branch
Financial Services Division
September 25, 1990

Notes to the Financial Statements
For the Year Ended March 31, 1990

Note 1 — Comparative Figures
The 1988-89 figures have been restated where necessary to conform to the 1989-90 presentation.

Note 2 — Statement of Revenue
Transfers to the Natural Gas Rebate Fund and Surplus Funds received from the Alberta Petroleum Incentives Program are not included in the Statement of Revenue.

Note 3 — Statement of Expenditures
Alberta Oil Sands Equity, Alberta Oil Sands Technology and Research Authority and Alberta Petroleum Marketing Commission are not included in the Statement of Expenditures.

Alberta
ENERGY

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